

Care and Maintenance of the Draeger OXY K Plus Self-Contained Self-Rescuer



Instructor's Guide

The content of this training specific to the Draeger OXY K Plus was taken from the Draeger OXY K Plus user manual dated 8/2000. For more information regarding the content contact: CSE Corporation, 10225 82nd Avenue, Pleasant Prairie, Wisconsin, 53158.

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Package Components

The training modules listed below can be used together or separately as appropriate for each audience. This guide explains each module and provides a list of related materials.

- Instructor's Guide - gives an overview of the training package and includes an inspection checklist
- Video - lasts five minutes and introduces care and maintenance issues
- Computer Based Training (CBT) CD - covers inspection and care issues for individual trainees or groups
- Screen Saver - reminds users of 3+3 donning procedures

Introduction

A persistent problem with self-contained self-rescuers (SCSRs) has been nagging doubts about the reliability of these important personal protective devices. One dimension of the reliability issue is the concern that workers do not adhere to manufacturers' recommended inspection and care procedures.

In order to appreciate the need to take care of their apparatus, it is important for miners to understand the protection an SCSR offers. Some mistakenly believe filter self-rescuers and SCSRs provide the same level of protection, though the filter self-rescuer is approved only as protection from carbon monoxide. The SCSR can protect miners from many other toxic substances such as Sulfur Dioxide, Hydrogen Sulfide, and Acrolein, a deadly product of burning timbers. And, of course, SCSR's may also protect workers from oxygen deficiency. Because the SCSR is a life saver, miners must take care to ensure the unit is ready for use if needed.

Description of the OXY K PLUS

The OXY K Plus is a closed circuit self-contained oxygen supply system designed for use in toxic or oxygen deficient atmospheres. Because of its small size, lightweight and rugged construction, it is belt wearable and ideally suited for self-rescue in the mining industry. The OXY K Plus provides oxygen from a small compressed oxygen bottle. The OXY K Plus is rugged and durable. But like anything else that is man-made, it may not work if it is not properly cared for.

Performance Objectives

The objective of this training package is to teach miners how to conduct routine inspections on their self-contained self-rescuers and to properly care for them. It also is designed to reinforce the relationship between routine inspection and the performance of the unit when it must be donned.

After completing either the video session or the CBT module, a trainee will be able to:

- conduct the daily required inspection according to the provided checklist.
- conduct the required 90 day inspection according to the manufacturer's recommended procedures.
- always properly care for an SCSR.
- assess when a damaged SCSR should be examined for removal from service.
- know the criteria that require an SCSR to be removed from service.

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Video Training Session

Look through the remainder of this section to become familiar with the training activity. Before conducting the hands-on portion of the training, you should review the objectives and materials thoroughly.

Materials Needed

To conduct this training activity, you will need:

- A VCR, TV monitor, and a copy of the videotape.
- Copies of the “Inspection Checklist” for trainees to follow when inspecting a unit. (Attached)
- Two or three SCSR units. These can be either the trainees’ own SCSRs, or extra units available at the mine. A training apparatus could also be used.

Conducting a Class

You are urged to follow these tips:

1. Present a brief introduction to trainees that explains the purpose of the class.
2. Have trainees view the videotape.
3. After showing the video, give each trainee a copy of the “Inspection Checklist”. Demonstrate the procedure for inspecting the unit and have trainees follow along with the checklist.
4. Ask trainees if they have any questions and discuss any points they may not understand.
5. Next, break trainees into groups of two or

three. Using the “Inspection Checklist”, have miners in each group inspect an SCSR.

6. After all trainees have finished inspecting their units, ask several to share with the class what they found.

7. As pointed out in the video, the SCSR will provide protection in an irrespirable atmosphere. Remind trainees that as long as they can still breathe from the apparatus after donning it, the unit is still providing oxygen. The breathing resistance will increase when the unit is working.

8. Discuss with trainees the importance of caring for the unit when in the mine. Miners need to understand that the SCSR may not work properly if internal components are damaged.

Care and Maintenance of the OXY K PLUS

This information is provided for trainers to use during class discussion. The following procedures should be followed to care for and maintain the OXY K PLUS.

1. Inspection: Each day, begin by checking the seal on the unit.
 - a. Look at the moisture indicator. The indicator should show a deep blue color. If the window shows that 50% of the particles have turned light blue or white, the unit must be removed from service.
 - b. Check the seal to ensure that it is not cracked, broken, or displaced.

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c. Examine the unit for damage to the housing. If there are cracks, scratches, dents, holes or hot stamps deeper than 1.5mm, the unit must be removed from service.

d. Inspect the factory service date label, and ensure that the date has not passed.

e. Check to ensure that the belt loops are not broken or missing.

f. At 90 days, the Oxy K Plus must be checked with an Acoustic Solid Movement Detector (ASMD) to test the oxygen generating chemical bed.

2. Maintenance: *After the unit has passed inspection, it's up to each miner to keep it ready for use.*

a. Always keep the unit clean and protect it from abuse. It should not be thrown about or subjected to severe physical abuse.

b. Do not store the OXY K PLUS in an environment where it will be subjected to temperatures above 122 °F or below -4 °F.

or missing

5. Determine if the OXY K PLUS is within its service life by inspecting the factory service date label.

6. Describe what steps must be taken to keep it ready for use including: a.) keeping it clean and not subject so severe physical abuse and b.) making sure the OXY K PLUS is not in an environment where it will be subjected to temperatures above 122 °F.

Some items addressed in the training are explained more fully below:

Moisture indicator – Moisture will destroy the Oxy K Plus's ability to produce oxygen. The moisture indicator shows whether moisture has penetrated the unit.

Seal – The seal keeps moisture from entering the unit.

Housing – Dents or deformations in the housing can compromise the Oxy K Plus's ability to function.

Following instruction, miners should exhibit mastery in inspecting the OXY K PLUS. This includes the following components:

- 1. Determine that the moisture indicator is deep blue in color.*
- 2. Determine the seal is not cracked, broken or displaced.*
- 3. Determine if there are cracks, , scratches, dents, holes or hot stamps deeper than 1.5mm punctures in the housing.*
- 4. Determine if the belt loops are broken*

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Computer-Based Training

Look through the remainder of this section to become familiar with the training activity. Before conducting the hands-on portion of the training, you should review the objectives and materials thoroughly.

Materials Needed

To conduct this training activity, you will need:

- *A personal or laptop computer with Windows 95 or higher and capability to read a CD.*
- *A projection unit for group presentation.*
- *The SCSR S.A.F.E.T.Y. Check CD.*
- *Two or three SCSR units. These can be either the trainees' own SCSRs, or extra units available at the mine. A training apparatus could also be used.*

Conducting a Class

This computer-based training can be worked individually with limited trainer supervision or it can be presented to a group of trainees by using a projection unit. A trainer should review the exercise, including reading the instructor's notes, before providing the CD to trainees.

You are urged to follow these tips:

1. Be sure the display properties on the computer monitor being used are set to minimum configuration of 16-bit color and 800 x 600 screen area.
2. Gather SCSR units to be used during the inspection activities and review the completed checklists after these activities.
3. Present a brief introduction to trainee or

trainees that explains the purpose.

4. Have printed copies of the "Inspection Checklist" for trainees to take with them after training.
5. Use the "Inspection Checklist" as an evaluation tool.
6. After all trainees complete their inspections, refer to the class discussion points under Care and Maintenance of the OXY K PLUS found under the *Video Training Session* section.

Screen Saver

A screen saver is included in this package as a reminder of the importance of every miner knowing the 3+3 donning procedures. The screen saver is available on a floppy disc. It can be copied and shared with everyone at your organization.

Additional Resources:

Kyriazi N, Shubilla JP [2000]. Self-contained self-rescuer field evaluation: sixth phase results. NIOSH Information Circular 9451.

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Inspection Checklist

Check the box if the unit passes that part of the inspection.

- ☐ **Sealed:**
 - ☐ Seal is in place and undamaged
 - ☐ Moisture indicator shows a deep blue colorNote any problems with seals:

- ☐ **Abuse not found (no signs of significant damage)**
 - ☐ Case is not cracked, burned, or deformed
 - ☐ No missing parts
 - ☐ Belt loops intact
 - ☐ No cracks, gouges, etc. greater than 1.5mm in depthNote significant damage:

- ☐ **Time and Temperature checked:**
 - ☐ now over -4°F
 - ☐ never exposed to over 122°F
 - ☐ OXY K PLUS is within its service life, as indicated by the factory service date label